

A taxonomic study on the genus *Prosthiochaeta* Enderlein in China, with descriptions of three new species (Diptera: Platystomatidae)

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Abstract: The generic characters of *Prosthiochaeta* Enderlein (Diptera: Platystomatidae) are discussed. Three new species of the genus are described from central and southwestern China: *P. emeishana* sp. nov., *P. fuscipennis* sp. nov. and *P. pictipennis* sp. nov. The illustrations of these new species and a key to known species of this genus are provided. All type specimens are deposited at the Institute of Zoology, Chinese Academy of Sciences, Beijing.

Key words: Diptera; Platystomatidae; *Prosthiochaeta* Enderlein; new species; China

The genus *Prosthiochaeta* belongs to the subfamily Platystomatinae (Diptera: Platystomatidae), which was erected by Enderlein (1924) for a single species, *P. cyaneiventris* Enderlein from Taiwan, China. Lately, Hara (1987) revised the genus and reported three additional species: *P. formosa* Hara from Taiwan of China, *P. bifasciata* Hara from South Korea and *P. flavihirta* Hara from Japan. Based on examinations of a large number of platystomatid specimens collected from southwestern and central China, three new species belonging to this genus were found, herein, described respectively as *P. emeishana* sp. nov., *P. fuscipennis* sp. nov. and *P. pictipennis* sp. nov. Moreover, illustrations of these new species and a key to the species of this genus are provided.

Morphological terminology generally follows McAlpine (1981). Measurements are in millimeters. The four ratios used in the descriptions are as follows: frons-eye ratio (width of frons/width of eye at ocellar triangle in dorsal view); gena-eye ratio (genal height/longest eye diameter in lateral view); clypeus-face ratio (vertical length of clypeus/vertical length of face in anterior view); head-thorax ratio (width of head/width of thorax in dorsal view).

Prosthiochaeta Enderlein, 1924

Prosthiochaeta Enderlein, 1924: 134. Type-species: *Prosthiochaeta cyaneiventris* Enderlein, 1924, by original designation.

Diagnosis Head higher than long and much narrower than thorax, orange to orange-red; with one pair of outer vertical and one pair of inner vertical bristles; orbital bristles usually absent; ocellars vestigial or absent. Frons slightly or strongly converging posteriorly. Face with a medial parallel-sided carina. Antennae much shorter than face, first flagellomere rounded at apex; arista bare or short-pubescent. Outer ventral part of occiput swollen. Proboscis large; clypeus moderately broad; palpus elongate.

Thorax slightly longer than wide, entirely brownish black to black. Scutum rugose; scutellum semicircular in shape and convex; anepimeron covered with fine, erect hairs. Thoracic chaetotaxy reduced and weak, with 1 postalar (previously regarded as a supra-alar bristle by Hara 1987 and shown as in his fig. 7), 1 intra-alar, 1 dorsocentral, 1 prescutellar and 1 anepisternal; 2 notopleurals and 4 to 6 scutellars; supra-alar bristles very weak or absent. Wing brown to dark brown with hyaline pattern; basal part of vein R bare; vein R₁ setose dorsally throughout; both veins R₄₊₅ and M subparallel apically; stigma narrow and elongate pointed at apex; cell cup not produced into a acute lobe at posterodistal corner; r-m cr-

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crossvein situated slightly behind middle of cell dm. Calypters lobate, white or dark brown, lower one about twice as long as upper one. Legs entirely dark brown to black; fore femur with 2–6 posteroventral black spines; mid tibia with 3–4 short ventral spines.

Abdomen black with metallic blue reflections; abdominal tergum VI in female absent; sternites rather small; sternite V in male deeply concave on posterior margin. Male terminalia with posterior margin of epandrium deeply concave; only inner surstylus well developed, enlarged apically; outer surstylus reduced; glans oval with two slender acrophalli, one of which is longer than another; ejaculatory apodeme fan-shaped. Female terminalia with oviscapae compressed dorsoventrally, more or less triangular in shape, about as long as tergum V; three round spermathecae present, one vestigial, smaller; aculeus elongate, setulose apically, rounded at apex.

Remarks This genus is differentiated from other genera of the Platystomatinae by the following combination of characters: blackish brown to black robust flies with orange to red-orange head; arista bare or short-pubescent; chaetotaxy reduced and weak; wing brown to dark brown with irregular hyaline pattern; basal part of vein R bare; stigma narrow and elongate, pointed at apex; r-m crossvein situated just beyond middle of cell dm; fore femur with posteroventral spines; male terminalia with only inner surstylus developed; female terminalia with 2 normal and one vestigial spermathecae.

Prosthiochaeta Enderlein appears to be an East Asian endemic, a total of seven species are known to occur in the eastern Palaearctic and northeastern Oriental regions. The biology of these species is unknown.

Key to species of *Prosthiochaeta* Enderlein

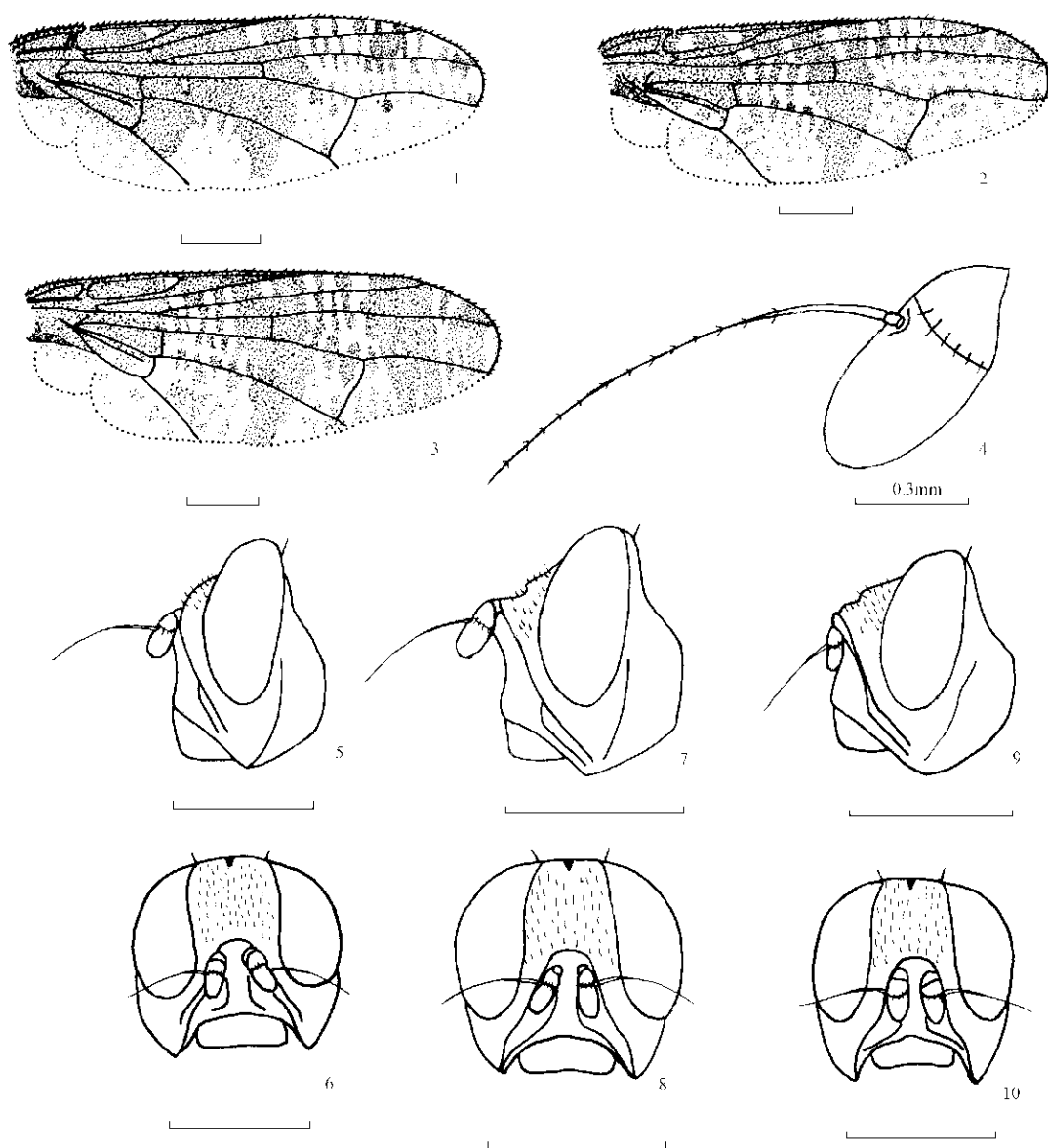
1. Prementum brownish orange to brown; hairs on anepimeron dark brown to black 2
Prementum blackish brown; hairs on anepimeron yellow. Japan *P. flavihirta* Hara
2. Arista bare 3
Arista short-pubescent 5
3. Calypters entirely white except for pale yellow margins; supra-alar bristles absent 4
Calypters mostly dark brown; one pair of weak supra-alar bristles present; wing dark brown with a few of irregular hyaline markings. Taiwan of China *P. cyaneiventris* Enderlein

4. Frons strongly converging posteriorly, the width at ocellar triangle about 0.64 times of that at lunule; basal half of wing predominantly brown to dark brown. China
..... *P. fuscipennis* sp. nov.
Frons slightly converging posteriorly; the width at ocellar triangle about 0.71–0.77 times of that at lunule; basal half of wing with prominent hyaline spots. China *P. emeishana* sp. nov.
5. Head with one pair of weak orbital bristles; width of frons at ocellar triangle about 0.7 times that at lunule; wing with an apical brown band extending from costa to hind margin. South Korea *P. bifasciata* Hara
Head without orbital bristles; width of frons at ocellar triangle about 0.6 times that at lunule; wing without such an apical brown band extending transversely from costa to hind margin
..... 6
6. Apical dark brown mark of cell r_1 reaching posteriorly to cell m. Taiwan of China *P. formosa* Hara
Apical dark brown mark of cell r_1 not reaching posteriorly to cell m. China *P. pictipennis* sp. nov.

Prosthiochaeta emeishana sp. nov. (Figs. 3, 5–6, 11–17)

Male Body length 6.5–11.5 mm; wing length 7.0–12.5 mm. Head height 1.28–1.36 × length; orange to red-orange except for ocellar triangle black, prementum red-brown; with one pair of stout outer vertical and one pair of weak inner vertical bristles, ocellars hair-like or absent. Frons with small black hairs, slightly converging posteriorly, the width at ocellar triangle 0.71–0.77 times that at lunule; frons-eye ratio 1.14–1.15. Face with a median carina; antennal grooves deep, not extending to oral margin. Gena-eye ratio 0.40–0.44. Antennae shorter than face, first flagellomere rounded at apex; arista bare. Outer ventral part of occiput swollen. Clypeus-face ratio 0.66–0.74; palpi elongate (Figs. 5–6). Head-thorax ratio 0.66–0.70.

Thorax entirely blackish brown to black. Scutum subquadrate in dorsal view, rugose and covered with black setulae. Scutellum convex, semicircular in shape. Fine, erect dark brown to black hairs on anepimeron about equal in length to anepisternal bristles. Black setulae on proepisternum equal in size to those on postpronotal lobe. Yellow to brown sparse pruinescence occurring on scutum and pleura except for postnotum. Halteres yellow. Thoracic bristles black, with 1 postalar, 1 intra-alar, 1



Figs. 1-10 Head and wings of *Prosthiochaeta* spp.

1. *P. fuscipennis* sp. nov., wing; 2. *P. pictipennis* sp. nov., wing; 3. *P. emeishana* sp. nov., wing; 4. *P. pictipennis* sp. nov., antenna in profile (scale bar = 0.3 mm); 5-6. *P. emeishana* sp. nov., head in profile and in anterior view; 7-8. *P. pictipennis* sp. nov., head in profile and in anterior view; 9-10. *P. fuscipennis* sp. nov., head in profile and in anterior view. All scale bars = 2 mm except in Fig. 4, which is especially mentioned.

dorsocentral, 1 prescutellar and 1 anepisternal; 2 notopleurals and 6 scutellars. Wing dark brown with hyaline markings; one complete medial dark brown band across $r-m$ crossvein and one apical dark brown band extending from apical part of cell r_1 to hind margin; stigma entirely dark brown, pointed at apex, equal in length to or slightly longer than cell c (Fig. 3). Calypters entirely white except for margins pale yellow. Legs dark brown to black; fore femur with 2-3 black posteroventral spines; mid

tibia with 4 black ventral spines.

Abdominal terga shining black with weak metallic blue reflections except for greyish-yellow pruinescence occurring on anterior and lateral parts of synterga I + II; tergum V about as long as tergum IV. Pleural membrane covered with black velvety pruinescence. Male terminalia with epandrium rather broad, deeply concave near the middle of posterior margin; cercus setulose, equal in length to epandrium; inner surstylus well developed, en-

larged apically (Fig. 16); glans oval with two acrophalli, one longer than another (Fig. 17); ejaculatory apodeme fan-shaped (Fig. 15).

Female Similar to male in general characters. Body length 6.0 – 11.0 mm (without ovipositor); wing length 7.5 – 12.0 mm. Abdominal tergum VI absent; tergum V slightly longer than tergum IV; oviscapae compressed dorsoventrally, about as long as tergum V. Female terminalia with three round spermathecae, one vestigial, smaller (Figs. 13 – 14); aculeus elongate, rounded at apex and with preapical setulae (Figs. 11 – 12).

Material examined Holotype ♂, China: Sichuan, Mt. Emei, 800 – 1 000 m, 18. I. 1957, HUANG Ke-Ren. Paratypes: 15 ♂♂, 16 ♀♀, Mt. Emei, 800 – 1 000 m, 12. I. 1957, LU You-Cai; 4 ♂♂, 19 ♀♀, Mt. Emei, 800 – 1 000 m, 10 – 25. I. 1957, ZHU Fu-Xing; 2 ♂♂, 1 ♀, Mt. Emei, 500 – 750 m, 24. V. 1957, ZHU Fu-Xing; 3 ♂♂, Mt. Emei, 500 – 750 m, 2-11. I. 1957, LU You-Cai, WANG Zong-Yuan; 1 ♂, Mt. Emei 600 – 1 100 m, 21. I. 1957, BU Xi-Ke; 1 ♂, Mt. Emei, 580 – 1 100 m, 12. I. 1957, ZI Yun-Zhen; 1 ♂, Mt. Emei, 1 100 m, 21. I. 1957, OU Bing-Rong; 6 ♂♂, 18 ♀♀, Mt. Emei, 500 – 750 m, 9-26. I. 1955, HUANG Ke-Ren, JIN Yin-Tao; 2 ♂♂, 10 ♀♀, Sichuan: Hongchunping, 1 000 m, 12-17. I. 1957, LU You-Cai (IZCAS).

Etymology The specific name is derived from Emeishan (= Mt. Emei), the type locality.

Distribution Sichuan.

Remarks This species is very similar to *P. bifasciata* Hara from South Korea in wing pattern, thoracic chaetotaxy and calypter coloration, differing primarily in lacking orbital bristles; arista bare; head much higher than long; fore femur with only 2 – 3 black posteroventral spines.

***Prosthiochaeta fuscipennis* sp. nov.** (Figs. 1, 9 – 10)

Female Body length 10.0 mm (without ovipositor); wing length 11.8 mm. Head height $1.25 \times$ length, orange to red-orange except for prementum red-brown and ocellar triangle black; with only one pair of outer vertical and one pair of inner vertical bristles, ocellars absent. Frons covered with small black hairs, the width at ocellar

triangle 0.64 times that at lunule; frons-eye ratio 1.1. Face with a medial parallel-sided carina, grooves deep. Gena-eye ratio 0.37. Antennae shorter than face; first flagellomere rounded at apex; arista bare. Clypeus-face ratio 0.53 (Figs. 9 – 10). Head-thorax ratio 0.61.

Thorax blackish brown to black. Scutum rugose, black setulose; with 3 narrow greyish-white pruinescence vittae. Pleura mostly covered with greyish yellow to brown sparse pruinescence. Black setulae on proepisternum longer than those on postpronotal lobe. Halteres yellow. Fine blackish brown hairs on anepimeron subequal in length to anepisternal bristle. Scutellum convex, semicircular in shape. Thoracic bristles black, with 1 postalar, 1 intra-alar, 1 dorsocentral, 1 prescutellar and anepisternal; 2 notopleurals and 5 scutellars (2 at left and 3 at right). Wing predominantly brown to dark brown in the basal half, with prominent hyaline spots in the apical part (Fig. 1). Legs entirely blackish brown to black; fore femur with 4 black posterolateral spines; mid tibia with 4 stout black spines ventrally.

Abdomen shining black with metallic blue reflections except for brownish yellow pruinescence on anterior and lateral parts of synterga I + II; tergum V about as long as tergum IV. Pleural membrane largely covered with black velvety pruinescence. Oviscapae more or less triangular, about as long as tergum V; aculeus rounded at apex, with preapical setulae. Genitalia not relaxed for study.

Male Unknown.

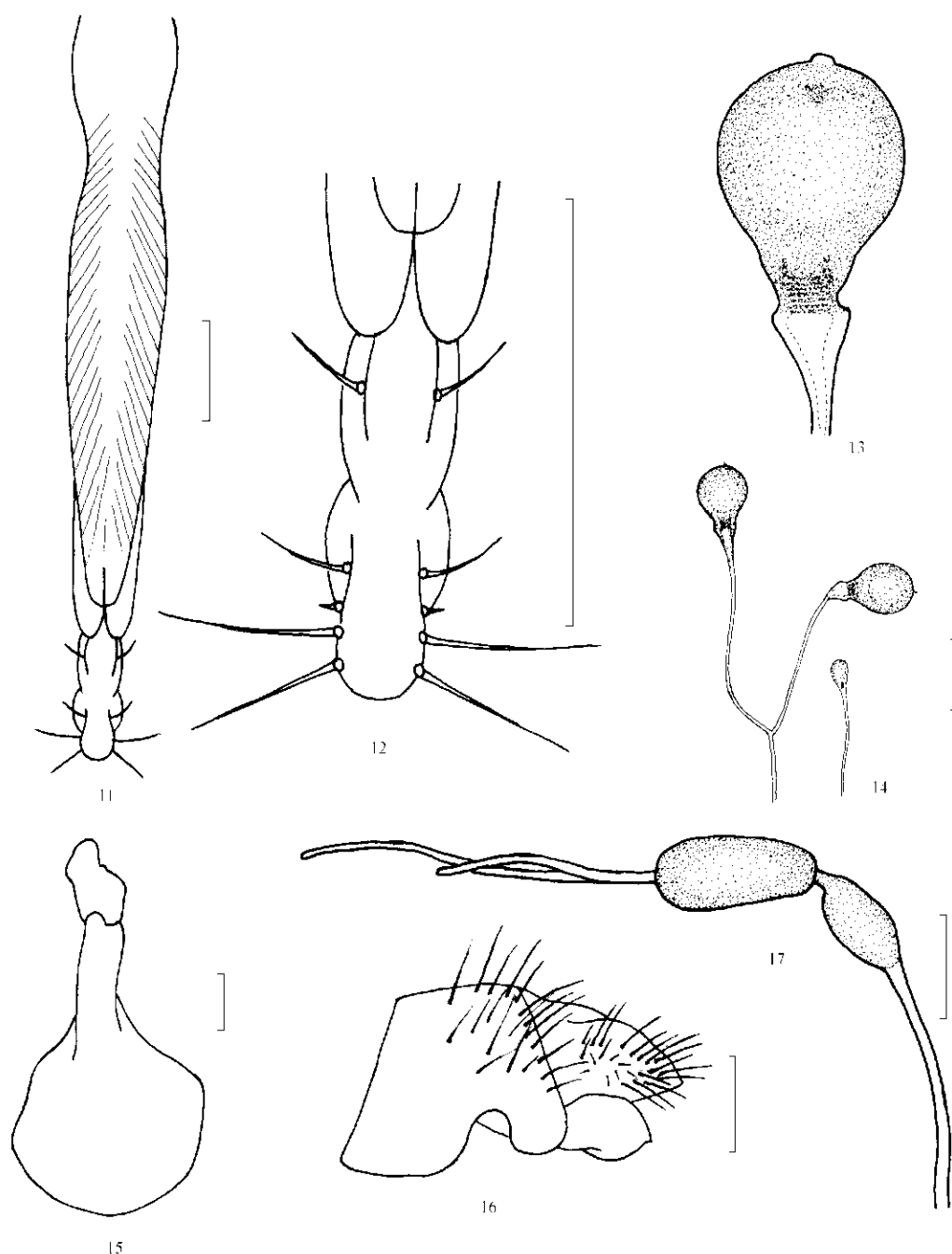
Material examined Holotype ♀, China: Yunnan, Weixi, 2 250 m, 13. I. 1981, LIAO Su-Bai (IZCAS).

Etymology The specific name combines the Latin words *fuscus* for brown, and *pennis* for wing, referring to the brown wing pattern.

Distribution Yunnan.

Remarks This species is readily differentiated from other known species of *Prosthiochaeta* by its distinctive wing markings (Fig. 1); frons strongly converging posteriorly; fine hairs on anepimeron comparatively short and sparse; and fore femur with 4 black posteroventral spines.

***Prosthiochaeta pictipennis* sp. nov.** (Figs. 2, 4, 7 – 8)



Figs. 11–17 Male and female terminalia of *Prosthiochaeta emeishana* sp. nov.

11. aculeus in ventral view; 12. apex of aculeus; 13–14. spermathecae 15. ejaculatory apodeme; 16. epandrium, cercus and inner surstylus in profile; 17. glans. Scale bars = 0.3 mm

Female Body length 10.5 mm (without ovipositor); wing length 11.5 mm. Head height $1.22 \times$ length; orange to red-orange except for ocellar triangle black and prementum red-brown; with narrow whitish-tomentose stripes along eye margins. One pair of outer vertical and one pair of inner vertical bristles present; ocellar bristles absent. Frons strongly converged posteriorly, the width at

ocellar triangle about 0.60 times that at lunule (Fig. 8); frons-eye ratio 0.92. Facial carina flattened dorsally; antennal grooves deep, not extending to oral margin. Gena-eye ratio 0.32 (Fig. 7). Antennae shorter than face, first flagellomere rounded at apex; arista short-pubescent (Fig. 4). Outer ventral portion of occiput swollen. Proboscis large and broad; clypeus-face ratio 0.54; palpi

elongate. Head-thorax ratio 0.55.

Thorax entirely blackish brown to black. Scutum subquadrate in dorsal view, rugose and black setulose, with one narrow medial greyish-pruinescence vitta and two narrow submedial greyish-pruinescence vittae. Most pleura covered with greyish yellow to brownish yellow sparse pruinescence. Scutellum convex, semicircular in shape. Fine brown to brownish black hairs on anepimeron comparatively short and sparse. Black setulae on proepisternum longer than those on postpronotal lobe. Halteres yellow. Thoracic bristles black, with 1 postalar, 1 dorsocentral, 1 prescutellar and 1 anepisternal; 2 notopleurals and 6 scutellars; intra-alars not differentiated. Wing brown to dark brown, with irregular hyaline pattern; apical part lacking a complete transverse brown band (Fig. 2). Calypters entirely white. Legs entirely dark brown to black, fore femur with only 2 posterolateral black spines, mid tibia with 3 short ventral spines.

Abdomen predominantly shining black with metallic blue reflections, brownish yellow sparse pruinescence occurring on anterior and lateral parts of synterga I + II; tergum V about as long as tergum III or slightly longer than tergum IV. Pleural membrane largely covered with black velvety pruinescence. Oviscape triangular, about as long as tergum IV. Female genital characters have not been examined.

Male Unknown.

Material examined Holotype ♀, China: Hubei, Mt. Xing, 1 300 m, 24. IV. 1999, LI Wen-Zhu (IZ-CAS).

Etymology The specific name combines Latin

words *pictus* for painted or colored, and *pennis* for wing, referring to the colored wing.

Distribution Hubei.

Remarks This species appears to be related to *P. formosa* Hara from Taiwan, differing primarily in the apical dark brown mark of cell r_1 not extending transversely from costa to cell m.

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中国前毛广口蝇属分类研究及三新种记述

(双翅目: 广口蝇科)

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摘要: 对前毛广口蝇属 *Prosthiochaeta* Enderlein (双翅目: 广口蝇科) 的属征进行了讨论。详细记述采自我国西南和华中地区的本属3新种: 峨眉前毛广口蝇 *P. emeishana* sp. nov., 褐翅前毛广口蝇 *P. fuscipennis* sp. nov. 及花翅前毛广口蝇 *P. pictipennis* sp. nov.; 并附其形态特征图和已知种检索表。新种模式标本保藏于中国科学院动物研究所。

关键词: 双翅目; 广口蝇科; 前毛广口蝇属; 新种; 中国

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